

## **AE Order Number Banner**

### **Report Description**

This report shows an AE Order Number in Barcode format for purposes of scanning. The Barcode format is Code 39.



App Number: pGRL1132042453

1RP - 2761
KEY ENERGY SERVICES, LLC

## **Bronco Oilfield Service**

## **Key Brine Water Station Closure Report**

Section 15 of Township 21 South, Range 37 East, Lea County, New Mexico

**December 15, 2011** 



Prepared By:

Safety & Environmental Solutions, Inc. 703 East Clinton Hobbs, New Mexico 88240 (575) 397-0510

NMOCO-HOBBS Shower ENV. ENCHNEUR SHOWED-HOBBS

## TABLE OF CONTENTS

I.	COMPANY CONTACTS	1
II.	BACKGROUND	1
III.	SURFACE AND GROUND WATER	1
IV.	SOILS	1
٧.	WORK PERFORMED	1
VI.	CONCLUSION	3
VII.	FIGURES & APPENDICES	3
	Figure 1 – Vicinity Map Figure 2 – Site Plan	4
Α	Appendix A – Analytical Results	6
A	Appendix B – Site Photographs	7

### I. Company Contacts

Representative	Company	Telephone	E-mail
Sergio Contreras	SESI	575-397-0510	scontreras@sesi-nm.com

### II. Background

Safety and Environmental Solutions, Inc. (SESI) was engaged by Bronco Oilfield Service to perform cleanup services at the Key Brine Station. The facility is located in Section 15 of Township 21 South, Range 37 East, of Lea County New Mexico.

### III. Surface and Ground Water

According the database provided by the New Mexico Office of State Engineer's online database, the average depth of water in this area is 70 feet which is located approximately 1,431 ft. northwest of the location.

### IV. Soils

The surface soils in the area are predominantly consists of well drained soils. Typically the surface layer is gravelly fine sandy loam or loamy fine sand. The subsoil is pale brown fine sandy loam, and the substratum is white, platy, indurate caliche. These soils are formed in wind-worked, calcareous sediments over fractured caliche. Slopes are 0 to 3 percent. The vegetation consists of short and mid grasses and shrubs. These soils are used as range and wildlife habitat. Small areas are used for irrigated cropland.

### V. Work Performed

On June 7, 2011, SESI was onsite with Mr. Ramon Ponce, operator for Bronco Oilfield Service. A total of two (2) test trenches were installed within release area in order to determine vertical extent of contamination. Test trench #1 was installed to a depth of five (5) ft. and at test trench #2 to of depth of three (3) ft. below ground surface (bgs). SESI left a message via voicemail to Mr. Geoff Leking, New Mexico Oil Conservation Division (NMOCD) representative, stating that due to the hard caliche layer, the equipment used was unable to break through 3'bgs of test trench #2.

Samples were retrieved in 1-5 ft intervals from test trench #1 and 1-3 ft intervals from test trench #2. All samples were properly preserved and transported under Chain of Custody to Cardinal Laboratories of Hobbs, New Mexico for analysis. The samples were analyzed for Chlorides (EPA Method 4500-Cl<sup>-</sup>B).

The results of the analysis are as follows:

Lab ID	Sample ID	Cl'(mg/kg)
Analysis Date:		06/08/11
H101174-01	TT#1 1' bgs	5,680
H101174-02	TT#1 3' bgs	1,180
H101174-03	TT#1 5' bgs	256
H101174-04	TT#2 1' bgs	3,280
H101174-05	TT#2 3' bgs	1,170

On June 27-30, 2011, SESI was onsite with Bryan's Oilfield Service to begin excavating contaminated area to a depth of three (3) feet bgs. A fence was constructed to barricade the contaminated area.

On July 22-29, 2011, SESI was onsite with Bryan's Oil field Service. A total of 1,242 yards of contaminated soil were transported to Sundance Services for disposal.

On August 1, 2011, SESI was onsite to obtain soil samples from bottom floor of excavated area. The entire area was excavated to a depth of 3' bgs. A total of ten (10) grab samples were retrieved from the bottom of the excavation. All samples were properly preserved and transported under Chain of Custody to Cardinal Laboratories of Hobbs, New Mexico for analysis. The samples were analyzed for Chlorides (EPA Method 4500-Cl<sup>-</sup>B).

The results of the analysis are as follows:

Lab ID	Sample ID	Cl'(mg/kg)
Analysis Date:		08/01/11
H101589-01	SP-1 3' bgs	240
H101589-02	SP-2 3' bgs	96.0
H101589-03	SP-3 3' bgs	480
H101589-04	SP-4 3' bgs	288
H101589-05	SP-5 3' bgs	10, 000
H101589-06	SP-6 3' bgs	432
H101589-07	SP-7 3' bgs	672
H101589-08	SP-8 3' bgs	1650
H101589-09	SP-9 3' bgs	6080
H101589-10	SP-10 3' bgs	464

As per New Mexico Oil Conservation Division (NMOCD) request, Mr. Leking, (NMOCD representative) advised to continue excavating SP-5 area until chloride concentration is below 250 mg/kg. On August 23, 2011, a test trench was installed to a depth of 10' bgs due to the backhoe refusal not able to break through hard caliche layer; the results concluded 464 mg/kg. On September 23, 2011, a trackhoe was utilized to break the hard caliche layer in the existing test trench. A sample was obtained at a depth of 15' bgs; the results concluded 304 mg/kg, slightly above the NMOCD's recommendation. On November 11, 2011, a trackhoe was onsite to excavate additional 2' bgs. The sample was properly preserved and transported under Chain of Custody to Cardinal Laboratories of Hobbs, New Mexico for analysis and analyzed for Chlorides (EPA Method 4500-Cl B). The result of the analysis was 224 mg/kg; therefore vertical extent was determined at a depth of 17' bgs.

On November 28, 2011 through December 2, 2011 the floor of the excavation was padded and domed with one (1) foot of clean topsoil. Akome, Inc. was onsite to install the 20-mil reinforced geo-membrane liner. Upon completion, the area was padded with an additional one (1) foot of clean topsoil then backfilled with like soils and contoured to grade.

On November 28-30, 2011 SESI was onsite with Bryan's Oilfield Service to begin backfilling the excavation.

On December 2, 2011, SESI was onsite with Bryan's Oil field Service. A total of 2,094 cu. yards of backfill material were hauled in.

### VI. Conclusion

Remedial actions at this site have all been performed with the approval of, and in accordance with all NMOCD requirements. The area will be reseeded in the spring as per landowner's specifications.

As a result, we respectfully submit this closure report for your consideration and approval.

### VII. Figures & Appendices

Figure 1 – Vicinity Map
Figure 2 – Site Plan
Appendix A – Analytical Results
Appendix B – Site Photographs

Figure 1
Vicinity Map

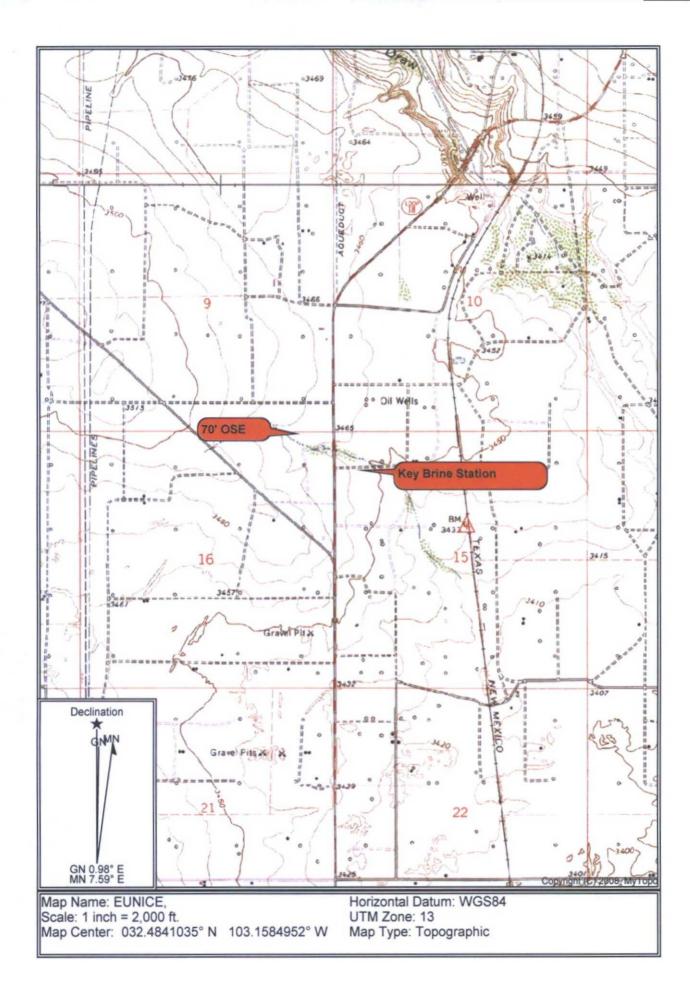


Figure 2 Site Plan



Appendix A Analytical Results



June 10, 2011

Bob Allen

Safety & Environmental Solutions

703 East Clinton

Hobbs, NM 88240

RE: BRO-11-001

Enclosed are the results of analyses for samples received by the laboratory on 06/07/11 14:50.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021

Benzene, Toluene, Ethyl Benzene, and Total Xylenes

Method SW-846 8260

Benzene, Toluene, Ethyl Benzene, and Total Xylenes

Method TX 1005

Total Petroleum Hydorcarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2

Haloacetic Acids (HAA-5)

Method EPA 524.2

Total Trihalomethanes (TTHM)

Method EPA 524.4

Regulated VOCs (V2, V3)

Accreditation applies to public drinking water matrices.

Celey D. Keena

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



Safety & Environmental Solutions Bob Allen 703 East Clinton

Hobbs NM, 88240

Fax To: (575) 393-4388

Received:

06/07/2011

Sampling Date:

06/07/2011

Reported:

06/10/2011

Sampling Type:

Soil

Project Name:

BRO-11-001

Sampling Condition:

\*\* (See Notes)

Project Number:

KEY ENERGY BRINE STA.

Sample Received By:

Jodi Henson

Project Location:

EUNICE, NM

Sample ID: TT #1 1' BGS (H101174-01)

Chloride, SM4500Cl-B

Analyzed By: HM

Analyte

Result

Reporting Limit Analyzed Method Blank

BS % Recovery True Value OC

Qualifier

Chloride

5680

16.0

06/08/2011

ND

448

112

400

RPD

0.00

Sample ID: TT #1 3' BGS (H101174-02)

Chloride, SM4500Cl-B

Analyte

Analyte

Analyte

Analyzed By: HM

Method Blank

ND

BS

% Recovery

True Value QC

RPD Qualifier

Chloride

Result 1180

16.0

Reporting Limit

06/08/2011

448

112

400

0.00

Sample ID: TT #1 5' BGS (H101174-03)

Chloride, SM4500Cl-B

Analyzed By: HM Analyzed

Analyzed

Method Blank

BS

% Recovery

True Value QC

Qualifier

Chloride

Result 256

Result

3280

Reporting Limit

RPD

Chloride

16.0

Reporting Limit

16.0

06/08/2011

Analyzed

06/08/2011

ND

448

112

400

0.00

Sample ID: TT #2 1' BGS (H101174-04)

Chloride, SM4500Cl-B

mg/kg

Analyzed By: HM

Method Blank

ND

BS

448

% Recovery

112

True Value QC

400

RPD

0.00

Qualifier

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim ansing, whether based in contract or tort, shall be limited to the amount paid by client for analysiss. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage. including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such dalim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laborat

Celey D. Keene





Safety & Environmental Solutions

Bob Allen

703 East Clinton

Hobbs NM, 88240

Fax To:

(575) 393-4388

Received:

06/07/2011

Sampling Date:

06/07/2011

Reported:

06/10/2011

Sampling Type:

Soil

Project Name:

BRO-11-001

Sampling Condition:

\*\* (See Notes)

Project Number:

KEY ENERGY BRINE STA.

Sample Received By:

Jodi Henson

Project Location:

EUNICE, NM

Sample ID: TT #2 3' BGS (H101174-05)

Chloride, SM4500CI-B

ma/k

Analyzed By: HM

Analyte

Result

Reporting Limit Analyzed

Method Blank

BS

% Recovery

True Value QC

RPD Qualifier

Chloride

1170

16.0

06/08/2011

ND

448

112

400

0.00

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whistoever shall be deemed waived urless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, white thirties to business interruptions, loss of use, or loss of profits incurred by client, a subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claims is based upon any of the above stated resours or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keine



### **Notes and Definitions**

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

Samples not received at proper temperature of 6°C or below.

Insufficient time to reach temperature.

Chloride by SM4500CI-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whistoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such dams is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celeg D. Keine



# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Mariand, Hobbs, NM 88240 (575) 393-2326 FAX (575) 393-2476

Company Name:	16: 5 EST		BILL TO	ANALYSIS REQUEST
Project Manager: 18	or. Bob Allen		P.O.#:	
Address: 70 3	3 5 clinton		Company:	
City: HE	565 State: 11	State: AM Zip: 88240	Attn:	
Phone #: 57	Phone #: 575-3570510 Fax#:	The second secon	Address:	
Project #: /5	i	Project Owner: Sam Stuze City.	e City:	
Project Name:	Project Name: Key = nergy Brine Sha	Fish	State: Zip:	
Project Locatic	Project Location: Gunice In		Phone #:	
Sampler Name: Zecac	Trac Kingid		Fax#:	
FOR LAB USE ONLY		MATRIX	PRESERV. SAMPLING	
Lab I.D.	Sample I.D.	AB OR (C)OMP TAINERS BETAWONU TEWATER	COOF BASE:	
HID III	50 th 1 1hr.	089 080	ACID ACID V ICE /	
- X	7/4/ 3/45		041111 0830	
N2-	11 5 885 True (855		0850	
n)	55,8 2,12	7	J 6520 Y	
	Commence of the second		The second secon	
	The second section of the second section of the second section of the second section s		The second secon	
			Transmission of the contract o	
PLEASE NOTE: Listriby, mulypes. All claims includ service. In no event shall (	PLEASE NOTE: Littliffy and Changage. Cardentis Bublique of clearl's exclusive remedy for any claim printing whether based in contract, or fort, shall be limited to the amyout paid by the client for minimum standards and any other course what have been cleared issued unlikes made in many other little within 30 days the competition of the reference of the course and contract shall be described as a proper production of the course that the construction of the course of the course and the course of the co	or any daim Miking Whether based in contra he deemed was ed unless made in withig a fine without lestation, business, internations	PLEASE NOTE: Luttily and Changes. Cardenist is biblidy and clearly exclusive remedy for any claim printing whether based in contract or fort, shall be limited to the amount paid by the client for the manner of the manner of the client for the manner. At definite house the negligance was day of other cause what have extracted and the clear of several shall contract the part of the contracted of the contracted of the opposite of	

Relinquished By

Phone Result: | Yes | No Add'l Phone #: Fax Result: | Yes | No Add'l Fax #: REMARKS: CHECKED BY: Sample Condition
Cool Intact
Yes Yes 320 Time: Sampler - JUPS - Bus - Other: Delivered By: (Circle One)

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393,2476



August 02, 2011

Bob Allen

Safety & Environmental Solutions

703 East Clinton

Hobbs, NM 88240

RE: BRO-11-001

Enclosed are the results of analyses for samples received by the laboratory on 08/01/11 12:30.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021

Benzene, Toluene, Ethyl Benzene, and Total Xylenes

Method SW-846 8260

Benzene, Toluene, Ethyl Benzene, and Total Xylenes

Method TX 1005

Total Petroleum Hydorcarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2

Haloacetic Acids (HAA-5)

Method EPA 524.2

Total Trihalomethanes (TTHM)

Method EPA 524.4

Regulated VOCs (V2, V3)

Accreditation applies to public drinking water matrices.

Celey D. Keine

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



Safety & Environmental Solutions

Bob Allen

703 East Clinton Hobbs NM, 88240

Fax To:

(575) 393-4388

Received:

08/01/2011

Sampling Date:

08/01/2011

Reported:

08/02/2011

Sampling Type:

Soil

Project Name:

BRO-11-001

Sampling Condition:

\*\* (See Notes)

Project Number:

KEY BRINE & WATER STATION

Reporting Limit

16.0

Sample Received By:

Hope S. Moreno

RPD

0.00

Project Location:

Analyte

Analyte

Analyte

Analyte

EUNICE, NM

Sample ID: SP - 1 3' BGS (H101589-01)

Chloride, SM4500Cl-B

Analyzed By: HM

% Recovery

True Value QC

Qualifier

Chloride

Result 240

08/01/2011

Analyzed

Method Blank ND

448

112

400

Sample ID: SP - 2 3' BGS (H101589-02)

Chloride, SM4500Cl-B

Analyzed By: HM

Result

Reporting Limit Analyzed Method Blank

BS % Recovery True Value QC

400

RPD Qualifier

Chloride

96.0

16.0 08/01/2011

ND

448

112

0.00

Sample ID: SP - 3 3' BGS (H101589-03)

Chloride, SM4500Cl-B

Analyzed By: HM

Chloride

Result

Reporting Limit

Method Blank

BS % Recovery True Value QC

RPD Qualifier

480

400

Result

16.0

Reporting Limit

Analyzed 08/01/2011

ND

448

112

0.00

Sample ID: SP - 4 3' BGS (H101589-04)

Chloride, SM4500Cl-B

mg/kg

Analyzed By: HM Method Blank

ND

BS

448

% Recovery

400

RPD

0.00

Qualifier

Chloride

288 16.0

Analyzed 08/01/2011

112

True Value QC

Cardinal Laboratories \*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such daim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene



Safety & Environmental Solutions

Bob Allen

703 East Clinton

Hobbs NM, 88240

Fax To:

(575) 393-4388

Received:

08/01/2011

Sampling Date:

08/01/2011

Reported:

08/02/2011

Sampling Type:

Soil

Project Name:

BRO-11-001

Sampling Condition:

\*\* (See Notes)

Project Number:

KEY BRINE & WATER STATION

Sample Received By:

Hope S. Moreno

Project Location:

EUNICE, NM

### mple ID: SP - 5 3' BGS (H101589-05)

	The second secon	
Chloride, SM4500CI-B	mg/kg	Analyzed By: HM
	9/9	raidifact by: iii

Analyte Result Reporting Limit Analyzed Method Blank BS % Recovery True Value QC RPD Qualifier Chloride 10000 16.0 08/01/2011 ND 448 112 400 0.00

### Sample ID: SP - 6 3' BGS (H101589-06)

Chloride, SM4500CI-B	mg/	'kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	432	16.0	08/01/2011	ND	448	112	400	0.00	

### Sample ID: SP - 7 3' BGS (H101589-07)

Chloride, SM4500CI-B	mg/	kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	672	16.0	08/01/2011	ND	448	112	400	0.00	

### Sample ID: SP - 8 3' BGS (H101589-08)

Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1650	16.0	08/01/2011	ND	448	112	400	0.00	

### ample ID: SP - 9 3' BGS (H101589-09)

mg	/kg	Analyze	d By: HM					
Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
6080	16.0	08/01/2011	ND	448	112	400	0.00	
	Result	Personal Section 1	Result Reporting Limit Analyzed	Result Reporting Limit Analyzed Method Blank	Result Reporting Limit Analyzed Method Blank BS	Result Reporting Limit Analyzed Method Blank BS % Recovery	Result Reporting Limit Analyzed Method Blank BS % Recovery True Value QC	Result Reporting Limit Analyzed Method Blank BS % Recovery True Value QC RPD

### Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Demages. Cardinal's liability and clients exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, ncluding, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such daim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keine





Safety & Environmental Solutions

Bob Allen

703 East Clinton

Hobbs NM, 88240

Fax To:

(575) 393-4388

Received:

08/01/2011

Sampling Date:

08/01/2011

Reported:

08/02/2011

Sampling Type:

448

112

Soil

400

Project Name:

BRO-11-001

Sampling Condition:

\*\* (See Notes)

Project Number:

**KEY BRINE & WATER STATION** 

16.0

Sample Received By:

Hope S. Moreno

RPD

0.00

Qualifier

Project Location:

EUNICE, NM

Sample ID: SP - 10 3' BGS (H101589-10)

Chloride, SM4500Cl-B

Chloride

464

Analyzed By: HM

ND

Analyte Result Reporting Limit Analyzed Method Blank BS % Recovery True Value QC

08/01/2011

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and Clern's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such daim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keine



### **Notes and Definitions**

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

\*\* Samples not received at proper temperature of 6°C or below.

\*\*\* Insufficient time to reach temperature.

Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or ton, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whistoever shall be deemed waived urless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Liaboratories.

Celey D. Keine



## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

of

Page /

101 East Marland, Hobbs, NM 88240 \* ARDINAL LABORATORIES

(505) 393-2326 Fax (505) 393-2476

ktersst wil be charged on all accounts more than ata of 24% per annum from the original data of inv Terms and Conditions; interestivil be charged on a 30 days past due at the rate of 24% per answer from and all casts of collactions, including attaney's feet. REQUEST ANALYSIS CHT0161008 1025 2640 1020 010 1015 TIME 5460 2550 2530 1030 1000 SAMPLING 08/01 08/01 0 8/01 DATE 08/01 BILL TO 08/01 0 × 101 Same 08/01 10/60 08/01 08/01 Zip: SHTO PRESERV Company: × ICE / COOF X ¥ × 7 Address: Phone #: V P.O. #: State: Fax#: ACID/BASE Attn: City: ЯЗНТО SCUDGE MATRIX TIC Safety & Environmental Solutions, Inc. TIOS 3. Sale State: NM Zip: 88240 MASTEWATER 575-393-4388 STATION RECOUNDWATER # CONTAINERS 5 5 (G)RAB OR (C)OMP 5 6 Project Owner: Project Name: (CE'y BriME'N CLATER 幺コ 3. BGS Fax #: 345 3. 13675 3: (36,5 3: 136,5 3.845 3. 136,5 3. 1345 3. 1365 3. 1345 7000 703 East Clinton Sample I.D. しついこうし 2 575-397-0510 **Bob Allen** BRO-11-001 5052 Hobbs 1.95 S.O. C. 56.3 59-3 50.5 59-10 50.4 50.01 SP- X Project Manager: Project Location: Company Name: Sampler Name: tho 1589-1 FOR LAB USE ONLY M 0 Lab I.D. Project #: Address: Phone #: City:

whether passed in contract or tort, shall be limited to the amount pass by the clear, for the unless made in witing and received by Cardinal within 30 days aftor completion of the applicable down, regardings over deline to besed upon any of the above sinces reserve or offerentials.

Received By:

Fax Result:

REMARKS: neumed by client, he subsidiarise, e, foce of use, or loss of profite anningus. At claims including those for negligance and any other cause whatcower shall so deemed walved service. In so evant olast Cerdinal bollochs for incidental or correcquental damages, including solitical trailate Millates or successors arising out of or Samples, Relinguished LEASE NOTE: Liability and Dam

Am Sheesen

Time/230 2×101/11

Received By:

Date:

Relinquished By:

Time:

Brought supplies directly to lab. Then

CHECKED BY:

Sample Condition

(Initials)

V

☐ Yes ☐ No Add'l Phone #:

† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476. Cool Intact

18.6 emp.

Sampler - UPS - Bus - Other: Delivered By: (Circle One)



August 23, 2011

Bob Allen

Safety & Environmental Solutions

703 East Clinton

Hobbs, NM 88240

RE: BRO-11-001

Enclosed are the results of analyses for samples received by the laboratory on 08/22/11 8:00.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021 Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method SW-846 8260 Benzene, Toluene, Ethyl Benzene, and Total Xylenes

Method TX 1005 Total Petroleum Hydorcarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2 Haloacetic Acids (HAA-5)

Method EPA 524.2 Total Trihalomethanes (TTHM)

Method EPA 524.4 Regulated VOCs (V2, V3)

Accreditation applies to public drinking water matrices.

Celey D. Keens

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager





Safety & Environmental Solutions

Bob Allen

703 East Clinton Hobbs NM, 88240

Fax To:

(575) 393-4388

Received:

08/22/2011

Sampling Date:

08/19/2011

Reported:

08/23/2011

Sampling Type:

Soil

Project Name:

BRO-11-001

Sampling Condition:

\*\* (See Notes)

Project Number:

KEY WATER & BRINE STATION

Sample Received By:

Jodi Henson

Project Location:

EUNICE, NM

Sample ID: TT - 3 10' BGS (H101767-01)

Chloride, SM4500Cl-B

ma/k

Analyzed By: AP

Analyte

Result

Analyzed

Method Blank

BS % Recovery

True Value QC

Qualifier

RPD

0.00

Chloride

464

Reporting Limit 16.0

08/23/2011

ND

448

112

400

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whistoever shall be deemed waived urless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Liboratories.

Celey D. Keine



### **Notes and Definitions**

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

\*\* Samples not received at proper temperature of 6°C or below.

\*\*\* Insufficient time to reach temperature.

Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and clients exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liabile for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celeg D. Keene



# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

of

Page

(505) 393-2326 Fax (505) 393-2476 101 East Marland, Hobbs, NM 88240

	H								_				-	-			
ANALYSIS REQUEST																	
			_														_
								وا	,) o	1/1 Com	1	×					
									26		TIME	0840					
BILL TO		Same				Zip:			SAMPLING		DATE	64/40					
BIL						174			RV.	: 8	3HTO						-
	20	Company:		83			#	١	PRESERV	7000						_	
et.	P.O. #:	duic	Attn:	Address:	City:	State:	Phone #:	Fax#:	PR	:38A8	_						
	p.	ပိ	Att	Ad	5	St	유	T.			3HTO					-	
1										30	ernb					_	_
d									MATRIX		סור		_		-	1	_
듹					12	5			MA		SOIL	시	+	-	_	-	_
15,			240	88	2	F				A3TAW3		1			_	-	-
io			88	43	ن	3				HANDMI	-	+	-	$\vdash$	+	+	_
Ξ			.:	93	M	5			_	UTAINERS	-		-		+	+	_
So			7	3	, <u></u>	4,				ANO(C)OMP.	(G) PA	5	_			1	_
conmental		on	State: NM Zip: 88240	Fax #: 575-393-4388	-	* Brew	至,	Ser		o.		36					
Company Name: Safety & Environmental Solutions, Inc.	Project Manager: Bob Allen	703 East Clinton	Hobbs	575-397-0510 Fax#:	Project #: (3-10-11-00)	Project Name: They winter + Bread STATION	Project Location: CUNCE N. W.	5082	1	Sample I.D.		TF-3 (0' 1345					
me:	ger:	7		10	0	K	tion:	:81	>		}	12	+		+	+	_
Company Na	Project Mana	Address:	City:	Phone #:	Project #: (3	Project Name	Project Loca	Sampler Name:	FOR LAB USE ONLY	Lab I.D.	HIDTIE	Page					

PLEASE NOTE: Liability and Damages. Cardinat's lichtlifty and client's evolusive temedy for any claim shelpty whether bissed in central or land, sind to limited to the amount gold by the offerst for the analysis. At chains including those for negligience and any other cause whateboews shall be deemed when anote in whiting and received by Cardinal within 30 days after compilein of the applicable accompanient of commodisated or companient damages, including without thrist on, businese interruptions, loss of use, or loss of profits incurred by client, the subabilienter. Date/2 2 Sampler Relinquished:

☐ Yes ☐ No Add'l Phone#:

Terms and Condithors; interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original dute of invoice, and all costs of collections, including alternay's fees.

† Cardinal cannot accept verbal changes. Please fax written changes to 676-393-2476. Cool Intact

200 emp.

Sampler - UPS - Bus - Other: Delivered By: (Circle One)

CHECKED BY:

Sample Condition

Received By:

Date: Time:

Relinquished By: XX



September 23, 2011

Bob Allen

Safety & Environmental Solutions

703 East Clinton

Hobbs, NM 88240

RE: BRO-11-001

Enclosed are the results of analyses for samples received by the laboratory on 09/22/11 13:15.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021

Benzene, Toluene, Ethyl Benzene, and Total Xylenes

Method SW-846 8260

Benzene, Toluene, Ethyl Benzene, and Total Xylenes

Method TX 1005

Total Petroleum Hydorcarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2

Haloacetic Acids (HAA-5)

Method EPA 524.2

Total Trihalomethanes (TTHM)

Method EPA 524.4

Regulated VOCs (V2, V3)

Accreditation applies to public drinking water matrices.

Celey D. Keene

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager





Safety & Environmental Solutions

Bob Allen

703 East Clinton

Hobbs NM, 88240

Fax To:

(575) 393-4388

Received:

09/22/2011

Sampling Date:

09/22/2011

Reported:

09/23/2011

Sampling Type:

Soil

Project Name:

BRO-11-001

Sampling Condition:

\*\* (See Notes)

Project Number:

**KEY WATER & BRINE STATION** 

Sample Received By:

Jodi Henson

Project Location:

EUNICE, NM

## Sample ID: T.T. 14-15' (H102027-01)

Chloride, SM4500Cl-B		mg/	kg	Analyze	d By: HM					
	Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride		304	16.0	09/23/2011	ND	432	108	400	0.00	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keina



### **Notes and Definitions**

ND Analyte NOT DETECTED at or above the reporting limit
RPD Relative Percent Difference

\* Samples not received at proper temperature of 6°C or below.

\*\*\* Insufficient time to reach temperature.

Chloride by SM4500Cl-B does not require samples be received at or below 6°C

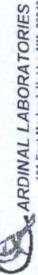
Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and clients exclusive remedy for any claim ansing, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived uriess made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claims is based upon any of the above stated reasons or otherwise. Results related only to the samples identified above. This report shall not be reprodued except in full with written approval of Cardinal Laboratories.

Celeg D. Keine



# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page

(505) 393-2326 Fax (505) 393-2476 101 East Marland, Hobbs, NM 88240

Sample I.D.  Sample I.D.  Sample I.D.  State: NM Zip: 88240  575-397-0510 Fax#: 575-393-4388  C (1 CC   Project Owner: Score Control on State	Protect Manager	mental solutions	1	# 00			The state of the s
Address:  City: State: Zip: Phone #: Fax #:	Bob Allen		-	*			
Address:  City: State: Zip: Phone #: Fax #: ATRIX OULD GE OUTHER: OUTH	703 East Clinton			Company:	Same		
Address:  City: State: Zip: Phone #: ATRIX		State: NM Zip: 8824		Attn:			
State: Zip: Phone #: Fax #: Fax #: Fax #: CELUDGE OTHER: DATE TIME SOLUTION ACIDINA SAMPLING ACIDINA SAMPLING ACIDINA SAMPLING F-22-11 POLUTION SAMPLING ACIDINA SAMPLING ACIDIN	575-397-0510 Fa			Address:			
ATRIX	TICOL P	oject Owner: Krans		City:			
Phone #:  Fax #:  Fax #:  OTHER:  OTHER:  OTHER:  OTHER:  ACID/8ASE:  OTHER:  OTHER:  ACID/8ASE:  ACID	En Wither +	Bring Statio		State:	Zip:		
Fax#:  PRESERV  G(G)RAB OR (C)OMP:  # COUNTRINER  # COUNTRINER  # COUNTRINER  # COUNTRINER  # COUNTRINER  # COUNTRINER  PRESERV  ACID/8ASE:  PRESERV  ACID/8ASE:	Econica	552		Phone #:		2	
MATRIX  # CONTAINER  # CONTAINE	-0	entresas		Fax #:		7	
GONTAINER  READINATION  READINAMENTER  READINAMENTER  ROLL			MATRIX	PRESERV		01.	
11-22-5	Sample I.D.	PARABOR (C)OMP.	PENDEE DIF BOIL	CE \ COCF	DATE	Ch/W	
	H. 14/35'		7		11-22-5	7	

☐ Yes ☐ No Add'l Phone# Phone Result: Fax Result: REMARKS: Cool Intact Received By: Redeived By: 30 Date: Time: Sampler Relinquished: Sampler - UPS - Bus - Other: Delivered By: (Circle One) Relinquished By

† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476.



November 14, 2011

Bob Allen

Safety & Environmental Solutions

703 East Clinton

Hobbs, NM 88240

RE: BRO-11-001

Enclosed are the results of analyses for samples received by the laboratory on 11/09/11 10:38.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021

Benzene, Toluene, Ethyl Benzene, and Total Xylenes

Method SW-846 8260

Benzene, Toluene, Ethyl Benzene, and Total Xylenes

Method TX 1005

Total Petroleum Hydorcarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2

Haloacetic Acids (HAA-5)

Method EPA 524.2

Total Trihalomethanes (TTHM)

Method EPA 524.4

Regulated VOCs (V2, V3)

Accreditation applies to public drinking water matrices.

Celey D. Keene

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager





Safety & Environmental Solutions

Bob Allen

703 East Clinton

Hobbs NM, 88240

Fax To:

(575) 393-4388

Received:

11/09/2011

Reported:

11/14/2011

Project Name:

BRO-11-001

Project Number:

**BRONCO** 

Project Location:

EUNICE, NM

Sampling Date:

11/09/2011

Sampling Type:

Soil

Sampling Condition:

\*\* (See Notes)

Sample Received By:

Jodi Henson

### Sample ID: TT-1 17' BGS (H102431-01)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	224	16.0	11/11/2011	ND	432	108	400	7.14	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such daim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratones.

Celey D. Keena



### **Notes and Definitions**

RPD Relative Percent Difference

\*\* Samples not received at proper temperature of 6°C or below.

Insufficient time to reach temperature.

Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Analyte NOT DETECTED at or above the reporting limit

Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celeg D. Keene

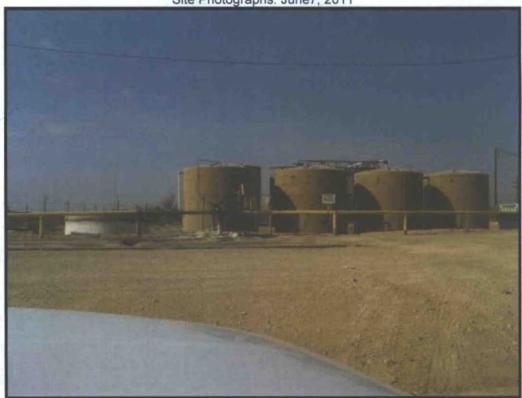


# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

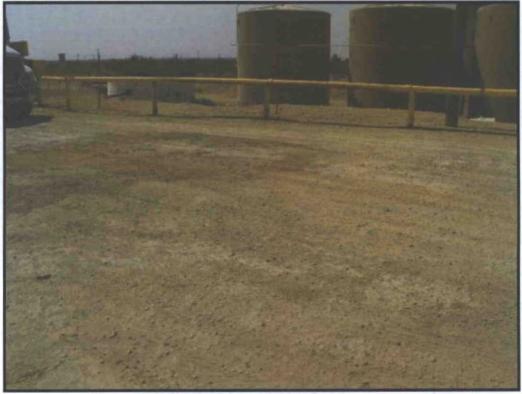
101 East Marland, Hobbs, NM 88240 (575) 393-2326 FAX (575) 393-2476

Company Name: 505		BILL TO	ANALYSIS REQUEST
Project Manager: FALLETS , (3c	303	P.O. #:	ŧ
0	12 TO 02	Company:	
	State: NWZip: 88240		
0	Fax #:	Address: Address:	
	Project Owner: GrewCC	City:	
Project Name: (3 "C.C.C.		State: Zip:	
Project Location: Coto Co	7.50	Phone #:	
Sampler Name: 5052, John	۳	Fax #:	
FOR LAB USE ONLY	MATRIX	PRESERV. SAMPLING	
Lab I.D. Sample I.D.	B OR (C)OMP BRINATER MDWATER FRAMER	SASE:	
Hioarai	(G)KAI	ACID/RE OTHER TIME	
-1 77-1-17,1365	7 9 6		
PLEASE NOTE:	rchasive remeny for any claim avising whether based is confact. Whatsoever shall be deemed waved unless made in writing and	whether based is contract or lost, shall be Einlated to like amount paid by the client for the united to the client for the	
service. In this event shall cardmai be hable for incidental or consequental damages, including without limitation, business interruptions, loss all set, as less of profits incurred by clean, its subsidiaries.	al damages, including without limitation, business interruptions, loss vices gereunder by Cardinal, regardless, of whether such claim is b	loss of use, or loss of profits incurred by chent, its subbidiaties. Its based upon any of the above stated reasons or otherwise.	
Relinquished By:	Tipe 38 // Beceived By:	Phone Result: Dives F. aXhesult: Dives REMARKS:	s □ No Add'IPhone#: es ⁻L'No Add'Irax'#:
	Time:		
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	12 ab	ttion CHECKED BY:	
† Cardinal cannot accept verbal changes. Please fax written changes to 505-393/2476	anges. Please fax written changes to	to 505-393/2476	

Appendix B Site Photographs Site Photographs: June7, 2011



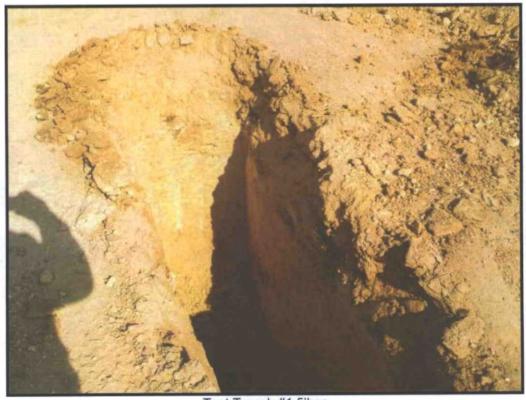
Tanks facing south



Evandor flowback release on location pad



Evandor flowback release facing southeast



Test Trench #1 5'bgs



Test Trench #1 backfilled facing east



Test Trench #2 Backfilled facing west



Test Trench #2 3'bgs



East of excavation facing west



Bottom Hole

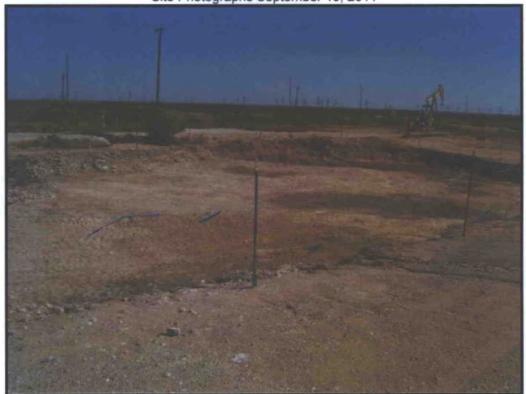


Middle of excavation



Middle of excavation facing North

Site Photographs September 19, 2011



East of excavation facing northeast



East of excavation facing southeast

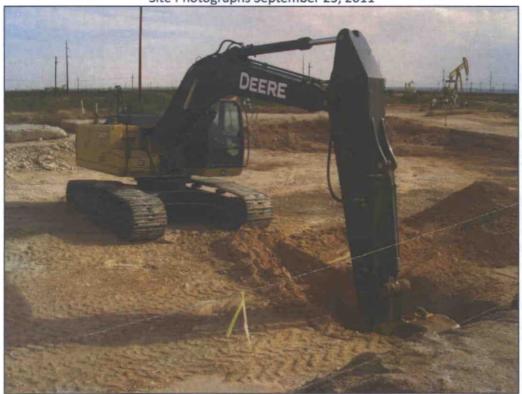


West of excavation facing east



West of excavation facing northeast

Site Photographs September 23, 2011



**Excavating Test Trench** 



Bottom of test trench 17' below ground surface

Site Photographs November 23, 2011



Liner facing East



Liner facing northeast



Middle of excavation with liner

Site Photographs November 30, 2011

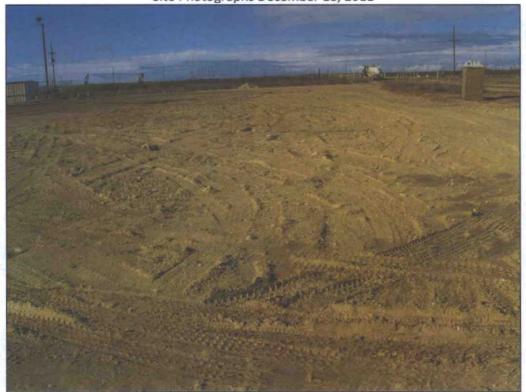


Backfilling area facing northwest



Backfill topsoil and caliche mix

Site Photographs December 18, 2011



Backfilled surface area facing west



Surface facing east